Complete Summary

TITLE

Intensive care: percent of central line-associated primary bloodstream infections (BSIs) by unit of attribution.

SOURCE(S)

Specifications manual for national hospital quality measures - ICU. Oakbrook Terrace (IL): Joint Commission on Accreditation of Healthcare Organizations (JCAHO); 2005. various p.

Measure Domain

PRIMARY MEASURE DOMAIN

Outcome

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the Measure Validity page.

SECONDARY MEASURE DOMAIN

Does not apply to this measure

Brief Abstract

DESCRIPTION

This measure is used to assess the percent of central line-associated primary bloodstream infections (BSIs) per 1,000 central line-days by unit of attribution.

RATIONALE

Intensive care unit (ICU) patients are at high risk for infections associated with the use of invasive devices. Although bloodstream infections (BSIs) often occur secondarily to other infections, they may result from contamination of intravenous catheters or occur spontaneously in immunosuppressed patients. Blood stream infections account for approximately 10% of nosocomial infections. Such infections greatly prolong hospitalizations and increase resource utilization. Infections are also one of the leading causes of deaths in the United States. High performance measure rates may suggest the need to examine the clinical and

organizational processes related to the care of patients with central lines, including adherence to recommended guidelines.

PRIMARY CLINICAL COMPONENT

Intensive care; blood stream infections (BSIs); central line

DENOMINATOR DESCRIPTION

Number of central-line days by Type of Unit (see the related "Denominator Inclusions/Exclusions" field in the Complete Summary)

NUMERATOR DESCRIPTION

Number of central-line associated primary blood stream infections (BSIs) by unit of attribution (location) (see the related "Numerator Inclusions/Exclusions" field in the Complete Summary)

Evidence Supporting the Measure

EVIDENCE SUPPORTING THE CRITERION OF QUALITY

- A clinical practice guideline or other peer-reviewed synthesis of the clinical evidence
- One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Evidence Supporting Need for the Measure

NEED FOR THE MEASURE

Unspecified

State of Use of the Measure

STATE OF USE

Current routine use

CURRENT USE

Internal quality improvement

Application of Measure in its Current Use

CARE SETTING

Hospitals

PROFESSIONALS RESPONSIBLE FOR HEALTH CARE

Measure is not provider specific

LOWEST LEVEL OF HEALTH CARE DELIVERY ADDRESSED

Single Health Care Delivery Organizations

TARGET POPULATION AGE

Age greater than or equal to 18 years

TARGET POPULATION GENDER

Either male or female

STRATIFICATION BY VULNERABLE POPULATIONS

Unspecified

Characteristics of the Primary Clinical Component

INCIDENCE/PREVALENCE

See "Rationale" field.

ASSOCIATION WITH VULNERABLE POPULATIONS

Unspecified

BURDEN OF ILLNESS

See "Rationale" field.

UTILIZATION

See "Rationale" field.

COSTS

Unspecified

Institute of Medicine National Healthcare Quality Report Categories

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

Data Collection for the Measure

CASE FINDING

Users of care only

DESCRIPTION OF CASE FINDING

Intensive care unit (ICU) patients 18 years of age or greater who have a central line in place

DENOMINATOR SAMPLING FRAME

Patients associated with provider

DENOMINATOR INCLUSIONS/EXCLUSIONS

Inclusions
Number of central-line days by Type of Unit* among:

- Patients 18 years of age and greater
- Patients receiving care in intensive care units (ICUs)
- Patients who have a central line in place

* Refer to the Data Dictionary of the original measure documentation for details.

Exclusions

- Patients in non-ICU areas
- Patients who do not have central lines in place while in the ICU

DENOMINATOR (INDEX) EVENT

Institutionalization
Therapeutic Intervention

DENOMINATOR TIME WINDOW

Time window follows index event

NUMERATOR INCLUSIONS/EXCLUSIONS

Inclusions
Number of central line-associated primary bloodstream infections (BSIs) by unit of attribution* among:

- Intensive care unit (ICU) patients age 18 years and greater with a laboratory-confirmed BSI who had central lines in place within the 48-hour period before the development of the BSI

* Refer to the Data Dictionary of the original measure documentation for details.

Exclusions

- Secondary BSIs
- BSI present or incubating on admission to the ICU
- clinical sepsis

NUMERATOR TIME WINDOW

Episode of care

DATA SOURCE

Medical record

LEVEL OF DETERMINATION OF QUALITY

Not Individual Case

OUTCOME TYPE

Clinical Outcome

PRE-EXISTING INSTRUMENT USED

Unspecified

Computation of the Measure

SCORING

Rate

INTERPRETATION OF SCORE

Better quality is associated with a lower score

ALLOWANCE FOR PATIENT FACTORS

Analysis by subgroup (stratification on patient factors, geographic factors, etc.)

DESCRIPTION OF ALLOWANCE FOR PATIENT FACTORS

This measure is stratified* by unit of attribution (location).

* Refer to Appendix J of the original measure documentation for details.

STANDARD OF COMPARISON

Internal time comparison

Evaluation of Measure Properties

EXTENT OF MEASURE TESTING

There were two phases of testing conducted on the intensive care unit (ICU) core measures as illustrated below:

- An alpha test that focused on feasibility of data collection and face validity, and
- A pilot test that involved a data collection period with testing for reliability of data elements required for measure calculation.

The Alpha Test

Alpha testing was conducted on an initial 9 measures in 2003. The objectives of the visits were to assess face validity, the feasibility of data collection, and to gain an understanding of the hospital's ICU environment. Face validity and feasibility of data collection were gleaned through focus group discussions, and the completion of an assessment tool for each measure tested.

Hospitals participating in the Alpha test were located in California, Indiana, Minnesota, New York, Pennsylvania, Texas, Tennessee, and Virginia. A total of 12 hospitals were visited in these states and one was accomplished through a conference call. The organizations varied from the community setting to large academic teaching hospitals. The majority of hospitals had separate Medical and Surgical Units or Mixed Medical/Surgical Units; a few had NICU's, CCU's and some hospitals had multiple units, for example, one hospital had 6 ICUs (Burn/Trauma, Vascular Surgical, Medical/Surgical, Neuro, CCU, and Cardiac Surgery). The alpha test resulted in 6 of the 9 measures moving forward for pilot testing.

The Pilot Test

Two separate and distinct test groups comprised of volunteer hospitals were utilized for the pilot test. The test objectives for each group were as follows:

Group 1:

- To assess from a three month data collection and transmission experience the following:
    - Assessment of data element reliability
    - Assessment of data collection effort
    - Discussion and identification of potential measure specification enhancements.

Group 2:

- To assess from a one-month data collection (without transmission) experience the following:
    - Data collection effort
    - Identification of potential measure specification enhancements.

Group 1 test group was comprised of 10 hospitals already participating in the Keystone Project (collaboration with the Johns Hopkins School of Medicine and the Michigan Hospital Association (MHA) to study the impact of processes of care on ICU patient outcomes). The 10 hospitals were geographically distributed across the state. The hospitals ranged from small (83 beds) to large (greater than 1067 beds), with correspondingly sized ICUs from 5 to 20 beds. Two hospitals were experienced APACHE users.

Ten pilot test hospitals were visited to re-abstract a sample of previously transmitted records. A total of 118 records were re-abstracted. The method of data collection for re-abstraction was retrospective, whereas hospital abstraction activities were primarily concurrent. For the ventilator bundle measures (ICU 1,2,3) Joint Commission staff rounded in the ICU approximately one hour after the completion of hospital staff rounding in order to verify head of bed elevation, stress ulcer disease (SUD) and deep vein thrombolysis (DVT) prophylaxis.

Group 2 consisted of 30 hospitals that were randomly selected from approximately 100 volunteer hospitals based on geographic location, bed size, urban/rural, teaching/non-teaching, type of ICUs, intensivist/no intensivist, Apache user/non-Apache user, National Nosocomial Infections Surveillance System (NNIS)/ non-NISS hospital.

EVIDENCE FOR RELIABILITY/VALIDITY TESTING

Lawler N. (Jonit Commission on Accreditation of Healthcare Organizations (JCAHO)). Personal communication. 2006 Feb 10. 1 p.

Identifying Information

ORIGINAL TITLE

ICU-4: central line-associated primary bloodstream infection (BSI).

MEASURE COLLECTION

Joint Commission Intensive Care Unit Measure Set

DEVELOPER

Joint Commission on Accreditation of Healthcare Organizations

ADAPTATION

Measure was adapted from another source.

PARENT MEASURE

Central Line-associated Bloodstream Infection (BSI) rate (Centers for Disease Control and Prevention [CDC], National Nosocomial Infections Surveillance System [NNIS])

RELEASE DATE

2005 Feb

MEASURE STATUS

This is the current release of the measure.

SOURCE(S)

Specifications manual for national hospital quality measures - ICU. Oakbrook Terrace (IL): Joint Commission on Accreditation of Healthcare Organizations (JCAHO); 2005. various p.

MEASURE AVAILABILITY

The individual measure, "ICU-4: Central Line-associated Primary Bloodstream Infection (BSI)," is published in "Specifications Manual for National Hospital Quality Measures - ICU." This document is available from the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) Web site. Check the JCAHO Web site regularly for the most recent version of the Specifications Manual and for the applicable dates of discharge. For further information, refer to www.jointcommission.org.

NQMC STATUS

This NQMC summary was completed by ECRI on January 17, 2006. The information was verified by the measure developer on February 10, 2006.

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